AMENDMENT TO THE CLAIMS

1. (Currently Amended) A quantitative method for measuring ventricular dysynchrony of a heart comprising:

providing an ultrasound imaging system;

forming a B-mode reference image of moving cardiac tissue including a septal wall and a lateral wall of a heart with the ultrasound imaging system;

using the B-mode reference image to form a first gate defining a first region of interest of the cardiac tissue including the septal wall, the first gate being associated with a first pulsed wave spectral Doppler line, the B-mode reference image further being used to form a second gate defining a second region of interest of the cardic tissue including the lateral wall, the second gate being associated with a second pulsed wave spectral Doppler line;

performing Doppler imaging to obtain pulsed wave spectral Doppler data of the first region of interest and the second region of interest; and

determining ventrical dysynchrony between the septal wall and the ~~leteral~~ lateral wall using the pulsed wave spectral Doppler data.

2. (Original) The method of Claim 1 further comprising forming a tissue Doppler image of the tissue, and forming the gate using the tissue Doppler image.

3. (Previously Presented) The method of Claim 1 further comprising measuring displacement of a septal wall and lateral free wall of the heart as a function of time for at least a cardiac cycle.

4. (Previously Presented) The method of Claim 1 further comprising displaying simultaneously a measured displacement of a septal wall and lateral wall of a heart as a function of time for at least a cardiac cycle.

5. (Previously Presented) The method of Claim 1 further comprising determining a velocity of tissue movement within the first region of interest.

6. (Previously Presented) The method of Claim 5 wherein the step of forming the gate comprises forming multiple-gates on each spectral Doppler line.

7. (Previously Presented) The method of Claim 1 wherein the step of forming a gate further comprises forming a first plurality of gates along a septal wall and forming a second plurality of gates along the lateral wall.

8. (Previously Presented) The method of Claim 6 further comprising using automatic border detection to measure tissue movement.

9. (Original) The method of Claim 1 further comprising triggering image capture using an EKG.

10. (Original) The method of Claim 1 further comprising determining a directional value to indicate a direction of tissue displacement.

11. (Original) The method of Claim 1 further comprising providing an apical image of a heart with at least a 2-chamber view.

12. (Original) The method of Claim 1 further comprising providing a short axis view of a heart.

13. (Previously Presented) The method of Claim 1 further comprising determining a strain rate of tissue within the region of interest.

14. (Previously Presented) The method of Claim 6 further comprising averaging the multiple-gate to detect global displacement of a septal wall of a heart and global displacement of a left free wall of the heart.

15. (Previously Presented) The method of Claim 1 further comprising time integrating the pulsed wave spectral Doppler data to determine displacement of tissue within the region of interest.

16. (Previously Presented) The method of Claim 1 further comprising measuring dysynchronous ventricular movement of the left ventricle of the heart.

17. (Previously Presented) The method of Claim 16 further comprising displaying a B-mode image and simultaneously displaying displacement of an interventricular septal wall and a left free wall of a heart as a function of time for at least a cardiac cycle to display dysynchronous ventricular movement of the heart.

18. (Previously Presented) The method of claim 1 further comprising providing a reference image to guide echocardiographic imaging operations and obtain quantitative data representative of heart wall motion.

19. (Withdrawn) A quantitative method for measuring tissue movement comprising:

providing an echocardiography imaging system;

forming a sequence of B-mode reference images of moving tissue;

using automatic border detection to detect tissue movement; and

determining displacement of the tissue within the region of interest.

20. (Withdrawn) The method of Claim 19 wherein the step of using border detection further comprises using a B-mode image and a motion compensated block searching process, each block comprising a plurality of pixels of the image.

21. (Withdrawn) The method of Claim 20 wherein each block has a size in a range of 3 X 3 pixels to 31 X 31 pixels.

22. (Withdrawn) The method of Claim 20 wherein the step of using automatic border detection further comprises providing an intensity threshold sequence to determine wall tissue boundaries.

23. (Withdrawn) The method of Claim 20 further comprising determining an intensity value by summing an intensity of each pixel in a block.

24. (Withdrawn) The method of Claim 19 further comprising simultaneously measuring displacement of a septal wall and a left free wall of a heart as a function of time for at least one cardiac cycle.

25. (Withdrawn) The method of claim 19 further comprising determining phase angle of displacement of a septal wall and a left wall of a heart, determining relative delay movement between the septal wall and the left wall of the heart.

26. (Withdrawn) The method of Claim 19 wherein B-mode image capturing is EKG triggered.

27. (Withdrawn) The method of Claim 19 further comprising setting at least 5 anchor points on an image of a heart to define a search area for block matching.

28. (Currently Amended) A method for measuring ventricular dysynchrony of a heart to provide operating parameters for a biventricular pacemaker comprising:

performing an echocardiographic ultrasound imaging process to provide quantitative data representative of heart wall motion, the imaging process including using a B-mode image for placement of a first gate along a first pulsed wave spectral Doppler line extending through a first heart wall of the heart and placement of a second pulsed wave spectral Doppler line extending through a second wall of the heart;

measuring ventricular dysynchrony of the first heart wall and the second heart wall using the quantitative data; and

selecting lead delay settings for a biventricular pacemaker using the measured ventricular dysynchrony.

29. (Previously Presented) The method of Claim 28 further comprising performing a Doppler imaging process includes forming a plurality of gates along each pulsed wave spectral Doppler line in a single image frame for measuring a lateral wall and a septal wall of a heart.

30. (Previously Presented) The method of Claim 28 further comprising forming pulsed wave spectral tissue Doppler data of the lateral wall and the septal wall.

31. (Previously Presented) The method of Claim 28 further comprising obtaining an echocardiographic image with an EKG trigger.

32. (Previously Presented) The method of Claim 28 further comprising forming a plurality of gates using a plurality of spectral Doppler lines on single image frame of the heart.

33. (Previously Presented) The method of Claim 28 further comprising determining phase angle of displacement of an interventricular septal wall and a left free wall of a heart, and determining relative delay movement between the two walls.

34. (Previously Presented) The method of Claim 28 further comprising performing a phase analysis of heart wall motion using automatic border tracking.

35. (Withdrawn) A system for diagnostic imaging of moving tissue comprising:

an ultrasound image display; and

a processing system, including a processing sequence stored on a computer readable medium, the processing sequence utilizing pulsed wave spectral Doppler data of moving tissue within gates of an image frame that determine a displacement of tissue.

36. (Withdrawn) The system of Claim 35 further comprising a programming processor connected to the processing system that programs a pacemaker.

37. (Withdrawn) The system of Claim 35 further comprising a Doppler processor.

38. (Withdrawn) The system of Claim 35 wherein the processing sequence further comprises spectral lines defining gates within an image frame.

39. (Withdrawn) The system of Claim 35 further comprising an external ultrasound probe.

40. (Withdrawn) The system of Claim 35 further comprising an ultrasound probe insertable within a body lumen.

41. (Previously Presented) The method of claim 1 further comprising using a first plurality of gates to measure a velocity of an epicardial region of the septal wall and a second plurality of gates to measure a velocity of an endocardial region of the septal wall.

42. (Previously Presented) The method of claim 1 further comprising using a plurality of anchor points to define a heart wall boundary.

43. (Previously Presented) The method of claim 1 further comprising using a pair of spectral Doppler lines to indicate a thickness of the septal wall.

44. (Previously Presented) The method of claim 1 further comprising using a phase relationship of heart wall displacement to determine dysynchrony.

45. (New) The method of claim 1 further comprising performing high pass filtering of ultrasound data.

46. (New) The method of claim 1 further comprising using tissue Doppler imaging to guide a range gate with a pre-set velocity scale.